**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
SAN ANTONIO DIVISION**

DR. GEORGE RICHARDSON, ROSALIE WEISFELD, AUSTIN JUSTICE COALITION, COALITION OF TEXANS WITH DISABILITIES MOVE TEXAS CIVIC FUND, AND LEAGUE OF WOMEN VOTERS OF TEXAS, *Plaintiffs*, v. TEXAS SECRETARY OF STATE, TRUDY HANCOCK IN HER OFFICIAL CAPACITY AS BRAZOS COUNTY ELECTIONS ADMINISTRATOR, AND PERLA LARA IN HER OFFICIAL CAPACITY AS CITY OF MCALLEN, TEXAS SECRETARY, *Defendants*.	§ § § § § § § § § § § § § § § §	No. 5:19-cv-00963

DEFENDANT SECRETARY OF STATE'S MOTION FOR SUMMARY JUDGMENT

Supplement to Appendix

8.   In 2019, I authored a book titled, *Forensic Examination of Signatures* which describes and discusses state of the art techniques and research in signature examination.[1] I co-authored a book in 2012 titled *The Neuroscience of Handwriting: Applications for Forensic Document Examination*, which integrates research in the fields of motor control, neuroscience, kinematics, and robotics to evaluate questioned signatures and handwriting.[2] The book sets forth, among other things, the scientific fundamentals of motor control as relevant to handwriting; the impact of age, disease, and medication on handwriting; and a quantitative approach to signature authentication, including kinematic and laboratory analyses of genuine versus disguised versus forged signatures.

9.   In 2012, I received the American Board of Forensic Document Examiners' New Horizon Award "In Recognition of His Exceptional Contributions in Scientific Research for the Advancement of Forensic Document Examination." In 2019, I received the American Academy of Forensic Sciences Questioned Documents Section Ordway Hilton Award "In Recognition of Outstanding Contributions to Forensic Document Examination."

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[1] Mohammed, L. (2019). *Forensic Examination of Signatures*. San Diego: Elsevier.

[2] Caligiuri, M.P., & Mohammed, L.A. (2012). *The Neuroscience of Handwriting: Applications for Forensic Document Examination.* Boca Raton: CRC Press/Taylor & Francis Group.

10.   I have testified as an expert witness in court and depositions more than 150 times on issues of signature, handwriting, and document examination in both civil and criminal cases, including cases in the United States, England, Trinidad & Tobago, and St. Vincent.

11.   I received a Ph.D. from La Trobe University in Melbourne, Australia in human biosciences, where I wrote my thesis on signature examination: "*Elucidating static and dynamic features to discriminate between signature disguise and signature forgery behavior*." Prior to that, I received my undergraduate degree in science at the University of West Indies; underwent a two-year training program in document examination at the Trinidad and Tobago Forensic Science Center; and received a master's degree in forensic sciences at National University in San Diego, California.

12.   My *curriculum vitae* is attached as Exhibit A, and a Testimony Listing for the past five years is attached as Exhibit B. I am being compensated at a rate of $400.00 per hour. My compensation in this matter is not in any way contingent on the content of my opinion or the outcome of this matter.

II.   BACKGROUND

13.   For this Declaration, I reviewed the Plaintiff's Original Complaint filed in this matter; the State of Texas Early Voting Ballot Board Handbook for Election Judges and Clerks 2018 (Updated January 2018); and relevant academic literature.

14.   Based on my review of the Complaint in this lawsuit, the laws challenged therein, Chapter 87 of the Texas Election Code, and the State of Texas Early Voting Ballot Board Handbook for Election Judges and Clerks 2018 (Updated January 2018), I understand that a group of election officials known as the Early Voting Ballot Board (EVBB) and/or the Signature Verification Committee (SVC) is required to compare the signatures on mail-in ballot applications and mail-in ballot return envelopes. § Senate Bill 5, 85th Legislature, First Called Session, (2017) [Sec. 87.041(c)].

15.   Signature verifications are conducted by the EVBB. The voter's signature may be accepted if, "neither the voter's signature on the ballot application nor the signature on the carrier envelope certificate is determined to have been executed by a person other than the voter, unless signed by a witness" Texas Election Code 87.041 (b) (2). In making this determination, the EVBB is guided by Texas Election Code 87.041 (e) and (f).

16.   In some jurisdictions, verifications of voter's signatures may also be conducted by a Signature Verification Committee (SVC) that is appointed by the Early Voting Clerk. The SVC "compares signatures on applications and corresponding carrier envelopes only to determine that the signatures on these documents are of the same person." [Sec. 87.027(i)]. The SVC may use electronic

copies of the mail ballot application and carrier envelope certificate for comparing signatures.

17.   The EVBB makes a determination if the SVC cannot determine whether the signatures are made by the same person. The EVBB cannot overturn a decision of the SVC that determines the signatures are by one writer. However, the EVBB can overturn, by majority vote, a decision of the SVC that the signatures were completed by different writers.

18.   The signatures may be original "wet-ink" or electronic copies.

19.   Neither the statutes governing the signature matching process nor the State of Texas Early Voting Ballot Board Handbook for Election Judges and Clerks 2018 (Updated January 2018) provide any guidance to elections officials on how to compare signatures.

20.   Based on my understanding, Texas election officials are lay individuals, meaning they are not required to have any training, certification, or experience in document examination or signature comparison.

21.   Based on my understanding, there are no further written statewide standards or procedures for election officials to evaluate whether a signature on a mail-in ballot application or ballot return envelope match each other, or match a signature in the qualified voter file or voter registration card.

III.   SUMMARY OF CONCLUSIONS

22.   The Texas signature match procedures do not set forth sufficient standards for determining whether a signature on a mail-in ballot application or return envelope match each other or match a voter signature displayed in the qualified voter file or on the voter's registration card, which results in error-prone determinations. Based on my review of the election statutes and Texas Early Voting Ballot Board Handbook, Texas also does not require election officials to have any training in signature examination and does not require that election officials be provided examination equipment, such as proper light sources and microscopes.

23.   Based on my experience and my review of the academic literature, it is my opinion that in these circumstances, Texas election officials are likely to make erroneous signature comparison determinations.

24.   Determining whether a signature is genuine is a difficult task for even a trained FDE, as signatures are written in different styles with varying levels of readability and variability. Laypersons, such as Texas election officials, have a significantly higher rate of error in determining whether signatures are genuine. Laypersons are also more likely to wrongly determine that authentic signatures are *not* genuine than to make the opposite error. In other words, Texas election officials are significantly more likely than trained examiners to make an incorrect signature-

comparison determination and are particularly likely to incorrectly decide that the signatures are *not* signed by the same person.

25.   The high rate of error among laypersons generally results from the inability to distinguish between normal "variations" in one individual's signatures as opposed to "differences" resulting from multiple signers. An individual's signatures may vary for myriad reasons, including age, health, native language, and writing conditions. Laypersons lack the tools and training to properly account for signature variation, which leads to erroneous mismatch determinations that are particularly pronounced in populations with greater signature variability, such as the elderly, disabled, individuals suffering from poor health, young voters (18-21), and non-native English speakers.

26.   These signature-determination errors are further compounded for Texas election officials with diminished eyesight or "form blindness" (a type of impairment in visual perception defined below)—both of which impact an individual's ability to make accurate handwriting authenticity determinations. While FDEs are screened for these traits, Texas law and guidance regarding signature comparison do not require election officials to undergo such screening.

27.   According to Senate Bill 5, 85th Legislature, First Called Session, (2017), the EVBB/SVC may compare signatures with two or more signatures the voter made within the preceding six years and on file with the voter registrar or county clerk to

determine whether signatures are those of the voter. Under current law, the comparison can be used to determine whether the signatures are those of the same voter (i.e. to accept or reject.)

28.   At a minimum, ten signature samples are usually required for an accurate signature determination to account for an individual's signature variability, given proper examination conditions.[3] However, this minimum amount can increase exponentially in cases where the writer is ill, disabled, elderly, or has other handwriting issues.

29.   The Texas Early Voting Ballot Board Handbook includes the following categories of voters as having valid reasons for early voting. 1. Persons who are 65 years of age or older on election day. [Sec. 82.003] and, 2. Persons who have a sickness or physical condition that prevents them from appearing at the polling place on election day without a likelihood of needing personal assistance or injuring their health. Expected or likely confinement for childbirth on election day is sufficient cause to entitle a voter to vote early by mail on the ground of disability. [Sec. 82.002]

30.   Further, if election officials have insufficient time to compare signatures, that would likely lead to additional erroneous determinations. A signature comparison may normally take a minimum of two hours.

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[3] Hilton, O. (1965). A further look at writing standards. *The Journal of Criminal Law, Criminology and Police Science*, Vol. 56, No. 3, p. 383.

31.   In sum, it is my opinion that Texas's current signature matching rules and procedures, which allow individuals without adequate training—and without guidance—to reject mail-in ballots and ballot applications for signatures they deem to be non-matching, will result in a significant number of erroneous rejections.

IV.   ANALYSIS AND OPINIONS

A. Texas Election Officials are likely to make erroneous signature Comparison Determinations.

32.   Individuals untrained in signature examination, like Texas election officials, are very likely to make mistakes when comparing signatures and are particularly likely to reject signatures erroneously as inauthentic or non-matching when they are in fact written by the same individual. These rejections are considered "Type II"[4] errors, and laypersons are more likely than FDEs to make such errors for several reasons. First, untrained election officials cannot reliably determine whether signatures are written by different individuals or whether the signatures are written by one person but exhibit natural variations. Second, untrained reviewers do not account for the many reasons for naturally varying signatures, causing them to erroneously reject authentic signatures. This is particularly true for writers who are poorly educated, learned English as a second language, elderly, disabled, young, or have health conditions. Third, untrained elections officials also fail to account for

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[4] *Infra* paragraph 33.

the different signature styles and features, leading to erroneous rejections. Lastly, Texas election officials are not tested for form blindness like FDEs, a condition that impacts their ability to accurately review signatures.

    i.   **Untrained laypersons are more likely than FDEs to erroneously determine authentic signatures are inauthentic.**

 33. There are two types of errors in signature examination. Type I errors occur when a non-genuine signature is deemed to be genuine, and a Type II error occurs when a genuine signature is concluded to be non-genuine. Type II errors are considered to more egregious than Type I as, in criminal cases an innocent writer may be charged based on an FDEs Type II error.

 34. Compared to FDEs, laypersons have higher so-called Type II error rates. In a 2001 study reviewing the error rates of FDEs and laypersons in comparing six genuine signatures with six non-genuine signatures, laypersons made Type II errors in 26.1% of cases while trained signature FDEs made such errors in 7.05% of cases.[5] That means that laypersons are more than 3 ½ times more likely to declare an authentic signature non-genuine—which, in the case of signatures on mail-in ballots and ballot applications, would mean that election officials would reject more than 3 ½ times the number of ballots and applications than FDEs. It should be noted that

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[5] Kam M., Gummadidala K., Fielding G., Conn R. (2001). Signature Authentication by Forensic Document Examiners. *Journal of Forensic Science*, 46(4):884-888.

for this study, six specimen signatures were used. If, as in Texas elections, only one genuine signature is used for comparison, it is highly likely that the error rate for both experts and laypersons would increase significantly.

35.   This study also found that laypersons are much more likely to make Type II errors than Type I errors, although laypersons are still substantially more likely to make Type I errors than trained FDEs (laypersons made Type I errors in 6.47% of cases while trained FDEs made such errors in 0.49% of cases).[6] A Type II error is considered among FDEs as being more egregious than a Type I error for signature verification.

36.   Similarly, a study conducted in Australia found that FDEs were statistically better than laypersons in determining genuineness or non-genuineness. The FDE group had a 3.4% error rate while the laypersons had a 19.3% error rate.[7] It must be noted that these error rates occurred when adequate signature samples and examination time were available. It can safely be assumed that the error rate will rise when inadequate comparison samples and time are available to the screener.

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[6] *Id*.

[7] Sita, J., Found, B., & Rogers, D. (2002). *Forensic handwriting examiners expertise for signature comparison*. J. Forensic Sci. 47(5).

       ii.   **Texas election officials cannot reliably determine whether signatures are written by different individuals or by one individual and exhibit natural variations.**

37.   Determining whether signatures are made by the same or different individuals requires a reviewer to discern whether a feature or combination of features in signatures are "differences" or "variations." Variations are deviations among repetitions of the same handwriting characteristic(s) that are normally demonstrated in the habits of each writer. A significant difference is an individualizing characteristic that is structurally divergent between handwritten items, that is outside the range of variation of the writer, and that cannot be reasonably explained.[8]

38.   In the field of signature examination, unexplainable "*differences*" between signatures suggest that different individuals wrote the signatures, whereas "*variations*" between signatures mean that one individual wrote the signatures. Determining whether signature features are "differences" or "variations" is one of the most difficult determinations in signature examinations, even for experienced FDEs.

39.   To make such a judgment reliably requires, at a minimum:

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[8] Scientific Working Group for Documents Standard for the Examination of Handwritten Items (www.swgdoc.org).

- Extensive training with different types of signatures: Becoming an FDE requires at least two, and typically three, years of full-time training with an experienced examiner, with at least eighteen months of training in the examination of signatures and handwriting. FDEs learn the science of signature examination, gain experience in casework, and are tested for proficiency.

- Adequate magnification and lighting equipment.

- Excellent eyesight.

- Adequate time: Insufficient time examining signatures is conducive to making errors. For example, one study found that FDEs spent more time looking at the questioned and known signatures than laypersons, and their evaluations were more accurate.[9]

Without these elements, Texas election officials are likely to misconstrue legitimate and expected "variations" between one individual's signatures for "differences" in signatures between two individuals, and conclude incorrectly that someone other than the registered voter signed the mail-in ballot or ballot application.

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[9] Merlino, M., Freeman, T., Dahis, V., Springer, V., et al. (Jan. 2015). *Validity, Reliability, Accuracy, and Bias in Forensic Signature Identification*. Department of Justice Grant 2010-DN-BX-K271, Document 248565, https://www.ncjrs.gov/ pdffiles1/nij/grants/248565.pdf.

40. This is illustrated by the case of voter Dr. George Richardson whose signature was incorrectly rejected. While there are pictorial dissimilarities between the two signatures, the EVBB may not have considered the possible reasons[10] for these apparent differences. Dr. Richardson's compared signatures are illustrated below. Copies of the submitted documents bearing Dr. Richardson's signatures are attached as Exhibit C.

BALLOT BY MAIL REQUEST FORM	ions, local elections, and the Nov ed otherwise below), *[signature]* If you cannot sign, make a mark and
MAIL-IN BALLOT SIGNATURE	persuasion by any person. (Certifico que la boleta adjunta exp *[signature] A. Richardson* SIGNATURE OR MARK OF VOTER (FIRMA O MARCA D
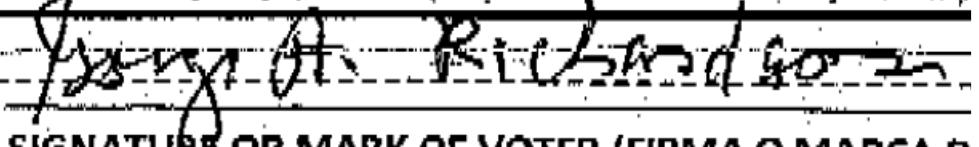
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[10] *Infra* paragraph 41.

   iii. **Untrained reviewers erroneously reject authentic signatures because they do not account for the many reasons for naturally varying signatures.**

41. Further, an individual's signatures may vary for myriad reasons, and to properly determine whether signatures are written by the same individual, one must consider the various reasons why features of the same individual's signatures may visually appear different. In one of the leading textbooks on handwriting examination, authors Roy Huber & A.M. Headrick identified twenty common reasons why individuals' signatures may appear to show variations:

- Adequacy of standards (or samples)—inadequate standards in terms of quantity and contemporaneousness will not be representative of the writer's range of variation. Variations may therefore be interpreted as differences.

- Accidental occurrences—i.e., these are one-off variations that will not appear in the specimen signatures.[11] Misinterpretation may lead to a decision of difference versus variation.

- Alternative styles—i.e., some writers have alternate signature styles. This may not be represented in the specimens.

- Ambidexterity.

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[11] A specimen signature is a signature that is known to have been written by a person. It is not disputed. Typical specimens are Driver's Licenses and Identification Cards.

- Carelessness or negligence.

- Changes in the health condition of writer.

- Changes in the physical condition of writer—e.g., fractures, fatigue, or weakness may alter features of an individual's signature.

- Changes in the mental condition or state of the writer.

- Concentration on the act of writing.

- Disguise or deliberate change.

- Drugs or alcohol.

- Influence of medications.

- Intentional change for later denial.

- Nervous tension.

- Natural variations—i.e., inherent variation as a result of differences in neuro-muscular coordination.

- Writing conditions—e.g., the individual's place or circumstances, such as in a moving vehicle or at a stationary table.

- Writing instrument—e.g., a pen versus a stylus.

- Writing position—e.g., the individual's stance.

- Writing surface—e.g., paper versus electronic screen.

- Writing under stress.

Examiners must consider each of these reasons in determining whether a feature is a "difference" created by different writers or whether the feature is simply a "variation" from the same writer. It is very unlikely that a Texas election official will have the knowledge, training, and experience to properly account for these factors.

42.   Laypersons are significantly more likely than FDEs to incorrectly reject authentic signatures of illiterate writers[12], writers for whom English is a second language, elderly writers, disabled writers, and writers with health conditions[13,14] to be non-genuine. Studies have shown that these types of writers tend to have less pen control than most other writers, and therefore would have a greater range of variation in their signatures. And the increased variation in the signatures of these groups only compounds laypersons' tendencies to err on the side of incorrectly finding authentic signatures to be non-genuine.

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[12] Hilton, O. (1965). A further look at writing standards. Journal of Criminal Law, Criminology, and Police Science, Vol. 56, No. 3, pp.383.

[13] Hilton, O. (1956). Influence of serious illness on handwriting identification. Postgraduate Medicine, Vol. 19, No. 2.

[14] Hilton, O. (1969). Consideration of the writer's health in identifying signatures and detecting forgery. Journal of Forensic Sciences, Vol. 14, No. 2, pp. 157-166.

43.   Since signatures are developed as a motor program in the brain[15], the signatures of writers for whom English is a second language are more likely to exhibit wide ranges of variation, as these writers will have to discard their former learned motor program and develop a new one for their new signature style. For instance, a writer who first learned to write in a non-Latin-based script, such as Chinese, will naturally show more variation when signing a document in English than a native writer. Likewise, where the writer's native language is written right to left, such as Urdu, the writer's signature may also be more likely to show variations in letter slanting. Qualified, experienced experts in the area of signature verification would know and account for these factors in evaluating signatures; Texas election officials, even if put through a short training session, are unlikely to be able to accurately account for these differences, particularly in an expedient time frame or when only one or a few specimen signatures are available for comparison.

44.   Furthermore, young voters (ages 18 to 25) are not likely to have fully developed signatures. According to Huber & Headrick (1999), "the development and progress of one's handwriting passes through four stages in the course of a lifetime: (1) the formative stage, (2) the impressionable or adolescent stage, (3) the

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[15] Mohammed, L. (2019). Forensic Examination of Signatures. Elsevier: San Diego, pp. 5-16.

mature stage, and (4) the stage of degeneration."[16] The signatures of young voters will fall between stages 2 and 3.   The U.S. Postal Service has reported that "writer[s] achieve graphic maturity by the 20th birthday."[17] Handwriting was developed as a means of communication[18], whereas signatures are developed as a means of identification[19]. Signatures tend to be more personalized and can therefore be considered as an over-developed form of handwriting. It follows that young writers today will not have developed signatures until later in life. This is exacerbated as young writers will presumably need to sign less often due to the increased use of personal identification numbers ("PINs") and other non-handwritten forms of identification. Their signature development can reasonably be expected to take longer than for previous generations. This will lead to an increased range of variation in a young writer's signature. The handwriting of adolescents can cause difficulties even for trained FDEs. Comparisons by untrained individuals of young voters'

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[16] Huber, R.A. & Headrick, A.M. (1999). *Handwriting Identification: Facts and Fundamentals*. Boca Raton, FL: CRC Press.

[17] Bureau of the Chief Postal Inspector (1966), *20th Century Handwriting Systems and Their Importance to the Document Analyst*.

[18] Plamondon, R., Srihari, S. (2000). Online and off-line handwriting recognition: a comprehensive survey. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Volume: 22, Issue:1, Jan.

[19] Srihari S.N., Srinivasan H., Chen S., Beal M.J. (2008). Machine Learning for Signature Verification. In: Marinai S., Fujisawa H. (eds) Machine Learning in Document Analysis and Recognition. *Studies in Computational Intelligence*, Vol 90. Springer, Berlin, Heidelberg, p. 389.

signatures on mail-in ballot applications and return envelopes will exacerbate the potential for error in rejecting their ballots.[20]

iv. Texas elections officials also fail to account for the different signature styles and features, leading to erroneous rejections.

45.   One of the reasons that accurate signature comparison determinations prove difficult, even for a trained FDE, is that signatures are written in three different styles[21]:

- Text-based: Nearly all the letters can be interpreted.

- Mixed: More than two, but not all, letters can be interpreted.
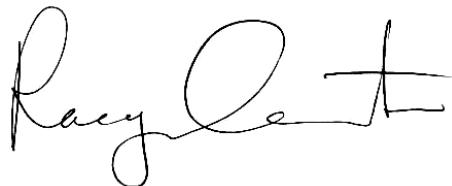
- Stylized: No letters can be interpreted.

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[20] Cusack, C.T & Hargett, J.W. (1989). A Comparison Study of the Handwriting of Adolescents. *Forensic Science International*, 42(3):239-248.

[21] Mohammed, L., Found, B., Rogers, D. (2008). Frequency of signature styles in San Diego County. *Journal of the American Society of Questioned Document Examiners*, Vol. 11, No. 1.

These signature styles exhibit significantly different characteristics that impact the signature-matching analysis, and by extension, the determination of whether signatures are genuine. For example, kinematic features of signatures, such as size, velocity, changes of acceleration, and pen pressure are important in determining whether a signature is genuine. Yet these kinematic features vary between the same individual's signatures, with the degree of variations often dependent on the signature style. The kinematic features of stylized signatures, for example, vary more significantly than the kinematic features of text-based signatures. And the less legible a signature becomes, the more the election official depends on their pattern recognition ability. Thus, signature styles can have an impact on the determination of genuineness or non-genuineness. Unfamiliarity with the different signature styles may impact a reviewer's ability to determine whether two signatures come from the same person, and would likely cause a lay person to decide that the compared signatures exhibit "differences" when the changes in features are simply "variations."

46.   To determine whether signatures are made by the same individual, a reviewer should focus on holistic features of signatures, such as alignment, slant, pen lifts, rhythm, the size of writing, the slope or slant of the letters, or other characteristics that are diagnostic of the process used to create signatures. These features are subtle, and a writer is usually unaware of the features, as they are excited

by the writer's subconscious motor program. These subtle features provide significant evidence of genuineness because they occur in natural handwriting. Lay persons, however, often focus instead on more eye-catching features in evaluating signatures. For example, an eye-tracking study on signature examination found that "lay participants focused to a greater extent on individual features such as arches, eyelets, hooks, shoulders, connections, troughs, or other individual features" that catch the eye, and "appear[ed] less likely to use holistic features."[22] But focusing on these eye-catching features is problematic because these are the types of features that a simulator will try to capture. Properly utilizing the subtle, holistic features of signatures to determine genuineness, however, requires both training and adequate time for review.

v. Texas election officials are not tested for form blindness, increasing the risk of erroneous signature match determinations.

47.   A laypersons' ability to make consistently correct determinations as to the genuineness of a signature may also be impacted by a condition known as "form blindness," which impairs "the ability to see minute differences in angles, forms, and sizes."[23] Most ophthalmologists agree that form perception is not an eye problem but

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[22] Merlino, *supra* note 9.

[23] Bertram, D. (2009). Univ. of S. Miss. *Form Blindness Testing: Assessing the Ability to Perform Latent Print Examination by Traditional Versus Nontraditional Students Dissertations.* 996, p. 33; Byrd, J. & Bertram, D. (2003). Form-Blindness. *Journal of Forensic Identification*, 53(3):315-341.

rather a translational problem. That is, "it is a perceptual inability to distinguish the small differences between shapes, colors, and patterns."[24] Therefore, in most cases, form blindness goes undetected, but diminishes a reviewer's ability to make accurate determinations of a signature's genuineness.[25] And while FDEs must pass a form blindness test[26] before being trained in handwriting identification, Texas requires no such test for election officials. There is thus a risk that some election officials have form blindness and are particularly prone to making erroneous signature determinations.

B. Even trained FDEs are likely to make erroneous signature comparison determinations under Texas's signature matching procedures.

48.   Even for trained FDEs, Texas's signature matching process would be prone to erroneous determinations due to the limited number of comparison signatures and the lack of proper equipment.

49.   Normally, FDEs require multiple specimen signatures for comparison with a questioned signature, and often more if issues such as age or illness are involved. These specimens are required to adequately determine the range of variation of the writer and properly account for the reasons for variation within an

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[24] Moody, Meredith G., "*Form-Blindness and Its Implications: A Verification Study*" (2016); Honors Theses; Paper 388.

[25] *Id.*, p. 32.

[26] Osborn, A.S.(1946). Questioned Document Problems 2nd. Ed., Boyd Printing Company, pp. 231-250.

individual's signatures discussed above. Indeed, no two complex, skillfully written, genuine signatures of one writer have ever been found to be exactly alike, but such a statement should be understood to be true speaking microscopically, and not as the carpenter measures[27]. This is so because signatures are the product of a motor program developed in the brain after practice and then executed with neuro-muscular coordination, and many factors can influence an individual's motor program and neuro-muscular coordination, including the factors discussed above. Inadequate standards, or failure to use adequate specimens fully representing the range of variation in a writer's signature, is well-known source of error.[28]

50.   Features observed in the questioned signature(s) may not be observed in the inadequate specimens. This may lead to an erroneous interpretation of a feature as a difference (two writers) or variation (one writer). Because Texas election officials are only required to compare the signature on the mail-in ballot application or ballot return envelope with one reference signature, they cannot distinguish accurately between features, variations, or differences.

51.   Furthermore, in many instances, Texas election officials may compare a voter's original "wet-ink" signature on the mail-in ballot application or ballot return

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[27] Osborn, A. (1910). Questioned Documents. The Lawyers' Publishing Co.,: Rochester, NY, p. 281.

[28] Huber, R.A. & Headrick, A.M. (1999). *Handwriting Identification: Facts and Fundamentals*. Boca Raton, FL: CRC Press.

envelope with electronic copies of the signature on the mail-in ballot application or ballot return envelope.

52.   Comparing a digitized signature with an original "wet-ink" signature has many inherent limitations, some of which are caused by the resolution of the digitized signature, whether the digitized signature is being viewed on a monitor or as a printed item, and the writing instruments used for each signature. If the resolution on monitor is low, or if the digitized signature is a poor copy of the original signature to begin with, this would make it very difficult for an untrained examiner to assess the line quality of the signature.

53.   Finally, as discussed above, Texas does not require election officials to use or be provided with proper equipment, such as magnification and lighting equipment. "[T]the microscope is the instrument which makes it possible to see physical evidence directly that otherwise may be invisible. . . ."[29]   Without this type of equipment, even a well-trained eye may make errors in a signature authenticity determination.

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[29] Osborn, A. S. (1929). *Questioned Documents. 2nd. Ed.* Boyd Printing Company, Albany, N.Y., USA.

V.   CONCLUSION

54.   Based on the studies cited above[30] laypersons had significantly higher error rates than experts in determining signature authenticity. These tests were conducted under conditions where the participants had adequate specimens, lighting, time, and examination equipment. For the reasons stated herein, it is my professional opinion that there is a high likelihood that Texas election officials will make erroneous signature match determinations given the limited specimens, time, and equipment that they will have to conduct the signature verifications.

55.   In particular, Texas election officials are significantly more likely to erroneously conclude that authentic signatures are *not* genuine than they are to make the opposite error—to accept inauthentic signatures as genuine. These erroneous determinations result from the inherent difficulty in making reliable signature authenticity determinations, particularly where, as here, the reviewer lacks training, is provided with an insufficient number of comparison signatures, and does not have access to proper equipment. The use of digitized signatures as a reference sample for comparison with an original "wet-ink" signature will most likely exacerbate the error rate. In this context, Texas's signature matching procedures are all but guaranteed to result in the erroneous rejection of mail-in ballots.

<p align="center">*   *   *</p>

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[30] *Supra* notes 4, 5, 6, 8.

I declare under penalty of perjury that the forgoing is true and correct.

Dated: February 3 , 2020 at _Burlingame_____ , CA.

Linton Mohammed, Ph.D., D-ABFDE

Appx._424

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
SAN ANTONIO DIVISION

DR. GEORGE RICHARDSON, ROSALIE WEISFELD, AUSTIN JUSTICE COALITION, COALITION OF TEXANS WITH DISABILITIES, MOVE TEXAS CIVIC FUND, LEAGUE OF WOMEN VOTERS OF TEXAS, and AMERICAN GI FORUM OF TEXAS, INC., Plaintiffs, v. TEXAS SECRETARY OF STATE, TRUDY HANCOCK, in her official capacity as BRAZOS COUNTY ELECTIONS ADMINISTRATOR, and PERLA LARA in her official capacity as CITY OF MCALLEN, TEXAS SECRETARY, Defendants.	Civil Case No. 5:19-cv-00963

DECLARATION OF DR. LINTON A. MOHAMMED

EXHIBIT A

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Diplomate: American Board of Forensic Document Examiners
Diploma in Document Examination - Forensic Science Society (England)
American Society of Questioned Document Examiners
(Member & Past-President)
American Academy of Forensic Sciences (Fellow)

Linton A. Mohammed
CURRICULUM VITAE

WORK EXPERIENCE

Forensic Science Consultants, Inc., 01/2012 - present
San Francisco, CA
Duties: Forensic Document Examination, expert testimony; research; management.

dba Rile, Hicks, & Mohammed, Forensic Document Examiners, 10/2010 – 01/2012
Long Beach, CA; San Francisco, CA
Duties: Forensic Document Examination, expert testimony; research; management.

dba Associated Document Examiners, 10/1997 – 09/2010
[with approval of San Diego County Sheriff's Department]
San Diego, CA
Duties: Forensic Document Examination, expert testimony; research; management.

San Diego County Sheriff's Department Regional Crime Laboratory, 08/1996 – 10/2010
San Diego, CA
Senior Forensic Document Examiner, (2002 – 2010)
Forensic Document Examiner, (1996 – 2002)
Duties:
Conducted examinations in the most complex cases involving: signatures, handwriting, typewriting, machine printing, commercial printing, photocopies, hand stamps, ink, paper, indented impressions, binding materials; restoration and decipherment of alterations, erasures, and obliterations.
Technical Lead - Questioned Documents Section.
Provided training and mentorship for junior examiners. Principal trainer in Forensic Document Examination for Marie Durina (07/2003- 08/2006) and Brenda Lanners (10/2009- 09/2010).
Provided training for investigators and attorneys.
Provided expert testimony in courts of law.

CURRICULUM VITAE – LINTON A. MOHAMMED

Conducted research, presented results at forensic science conferences, and published in peer-reviewed journals.
Produced and maintained the Questioned Documents Section Quality Manuals.
Oversaw the Questioned Documents Section's ASCLD-LAB accreditation status.
Acted as an Audit Team Captain or part of audit teams as per the Laboratory's ASCLD-LAB accreditation protocols.
Participated in proficiency testing.

Laboratory of the Government Chemist, 07/1993 – 07/1996
Teddington, Middlesex, England
Forensic Document Examiner

Caribbean Institute of Forensic Investigations Ltd., 06/1992 – 07/1993
Forensic Document Examiner
Trinidad, West Indies

Trinidad and Tobago Forensic Science Center, 01/1989 – 06/1992
Forensic Document Examiner; Safety Officer
Trinidad, West Indies

Trinidad and Tobago Forensic Science Center, 12/1986 – 12/1988
Chemist 1
Two-year full-time training program in Document Examination. (December 1986-December 1988) at the Trinidad and Tobago Forensic Science Center, Port of Spain, Trinidad. Mr. Robert Fawcett (Staff Sergeant [retired], Royal Canadian Mounted Police) conducted the training, which included the examination of: signatures, handwriting, typewriting, machine printing, commercial printing, photocopies, hand stamps, ink, paper, indented impressions, binding materials; restoration of alterations, erasures, and obliterations, photography, and court testimony.

EDUCATION

Ph.D. (Human Biosciences)
La Trobe University, Melbourne, Australia, 2012 Thesis: "*Elucidating spatial and dynamic features to discriminate between signature disguise and signature forgery behavior*"
Supervisors: Assoc. Prof. Doug Rogers and Dr. Bryan Found

Master of Forensic Sciences
National University, San Diego, CA, 2005

Bachelor of Science (General) [Honors]
University of the West Indies, St. Augustine, Trinidad & Tobago, 1984

CURRICULUM VITAE – LINTON A. MOHAMMED

TEACHING EXPERIENCE

Oklahoma State University, 2006 – present:
Adjunct Assistant Professor
Master of Forensic Sciences Administration and Graduate Certificate in Questioned Documents (online programs)

o   Graduate course: Historical Aspects of Questioned Documents (4 hours per week during a semester)

o   Graduate course: Technical Aspects of Questioned Documents (4 hours per week during a semester).

PROFESSIONAL CERTIFICATIONS

▪   Certificate of Qualification in Forensic Document Examination (No. 298)
American Board of Forensic Document Examiners, Inc., 1998 (re-certified every 5 years since 1998 to present).

▪   Diploma in Document Examination
Chartered Society of Forensic Sciences, 1996
(re-certified every 5 years since 1996 to present).

TESTIMONY EXPERIENCE

Testified over 100 times as an expert witness in Forensic Document Examination in USA (Federal & State courts, depositions), England (High Court & Magistrates' Court), and the Caribbean (High Court & Magistrates' Court).

AWARDS

2019: **Ordway Hilton Award** – American Academy of Forensic Sciences Questioned Documents Section (In Recognition of Outstanding Contributions to Forensic Document Examination).

2012: **New Horizon Award** – American Board of Forensic Document Examiners, Inc. (In Recognition of Exceptional Contributions in Scientific Research for the Advancement of Forensic Document Examination).

PUBLICATIONS

Books

Mohammed, L. *Forensic Examination of Signatures*. Elsevier, 2019.

Caligiuri, M. & Mohammed, L. *The Neuroscience of Handwriting: Applications for Forensic Document Examination.* Taylor & Francis: Boca Raton, 2012.

CURRICULUM VITAE – LINTON A. MOHAMMED

Papers

1. Caligiuri, M., & Mohammed, L. (2019). *Signature Dynamics in Alzheimer's Disease*. Forensic Science International 302 (2019)109880.

2. Ascicioglu, F., Tekin, T., Ozbek, N., Cevik, F., Ozcan, F., Mohammed, L. (2019). *Prepared Disappearing Ink and Decipherment of Documents*. J. Forens. Sci. doi: 10.1111/1556-4029.14084

3. Caligiuri, M., Mohammed, L., Lanners, B., Hunter. G. (2018). *Kinematic Validation of FDE Determinations about Writership in Handwriting Examination: A preliminary study.* Journal of the American Society of Questioned Document Examiners, Vol, 21, No. 1.

4. Mohammed, L., Found, B., Caligiuri, M., Rogers, D. (2015). *Dynamic Characteristics of Signatures: Effects of Writer Style on Genuine and Simulated Signatures*. Journal of Forensic Sciences, January 2015, Vol. 60, No.1.

5. Mohammed L.A. (2013). *History of the Forensic Examination of Documents*. In: Siegel JA and Saukko PJ (eds.) Encyclopedia of Forensic Sciences, Second Edition, pp. 386-390. Waltham: Academic Press.

6. Caligiuri, M., Mohammed, L., Found, B., & Rogers, D. (2012). *Nonadherence to the Isochrony Principle in Forged Signatures*. Forensic Science International 223 (2012) 228–232.

7. Mohammed, L., Found, B., Caligiuri, M., Rogers, D. (2011). *The Dynamic Character of Disguise Behavior for Text-Based, Mixed, and Stylized Signatures.* J Forensic Sci, January 2011, Vol. 56, No. S1 pp. S136-141).

8. Mohammed, L., Ostrum, B. (2010). *Using Adobe Photomerge™ for Demonstrative Evidence*, Journal of the American Society of Questioned Document Examiners, Vol. 13, No. 1.

9. Mohammed, L.A. (2009). *Alterations, Erasures, and Obliterations of Documents,* in Wiley Encyclopedia of Forensic Science, Jamieson, A., Moenssens, A. (eds). John Wiley & Sons Ltd., Chichester, UK, pp. 128-134.

10. Mohammed, L., Found, B., Rogers, D. (2008). *Frequency of Signature Styles in San Diego County* – Journal of the American Society of Questioned Document Examiners, Vol. 11 (1).

11. Mohammed, L., Richards, G. (2006). *Thinking Outside the Box* – Journal of the American Society of Questioned Document Examiners, Vol. 9 (2).

CURRICULUM VITAE – LINTON A. MOHAMMED

12. Mohammed, L., Jenkinson, G. (2002). *Association of counterfeit documents to a printing plate by means of half tone dots* – Journal of the American Societyof Questioned Document Examiners, Vol. 5 (1).

13. Mohammed, L. (1999). *Write-On™: A new tool for handwriting comparison* - Journal of the American Society of Questioned Document Examiners, Vol. 2 (2).

14. Mohammed, L. (1999). *An evaluation of documents produced by a high-speed, high-volume scanning process* - Forensic Science Communications, Vol. 1 (3).

15. Mohammed, L. (1998). *Sequencing writing impressions and laser printing or ink- jet printing using the ESDA* - Journal of the American Society of Questioned Document Examiners, Vol. 1 (1).

16. Mohammed, L. (1993). *Signature disguise in Trinidad and Tobago* - Journal of the Forensic Science Society, Vol. 33 (1).

PRESENTATIONS

Workshops

- *Non-Destructive Examination of Inks (4 hours).*
  - Co-presented with Peter V. Tytell and Derek J. Hammond at the 77th Annual General Meeting of the American Society of Questioned Document Examiners, Cary, NC.

- *The Forensic Examination of Genuine, Disguised, and Simulated Signatures with an Introduction to the Neuroscience and Kinematics of Handwriting (2 days)*
  - Presented at the Scottish Police Authority, Glasgow, Scotland 2018.

- *The Forensic Examination of Original and Copied Signatures*
  - Presented at The Midwestern Association of Forensic Sciences Conference, Cincinnati, OH 2017.

- *Likelihood Approach and Document Examination: What For?*
  - Co-presented with Liv Cadola and Tobin Tanaka at the 21st Triennial Meeting of the International Association of Forensic Sciences, Toronto, Canada 2017.

- *The Examination of Skillfully Simulated Arabic Signatures*
  - Presented at the 2nd Saudi International Conference on Forensic Medicine and Sciences, Riyadh, Kingdom of Saudi Arabia 2017.

CURRICULUM VITAE – LINTON A. MOHAMMED

- *The Forensic Examination of Genuine, Disguised, and Simulated Signatures with an Introduction to Kinematics of Handwriting*
  o Presented at the Midwestern Association of Forensic Sciences Conference, Branson, MO 2016.

- *Genuine, Disguised, and Simulated Signatures; Kinematics of Handwriting; Formal and Informal Signatures*
  o Co-presented with Lloyd Cunningham at the Australasian Society of Forensic Document Examiners, Inc., Sydney, Australia 2016.

- *Document Examination in the USA*
  o 2-day seminar presented at the Institute of Forensic Science Seminar, Beijing, China 2015.

- *Are Fountain Pens Back in Vogue? Characteristics of Fountain Pen Writing and Aqueous Ink Analysis*
  o Co-presented with Lloyd Cunningham, Dr. Valery Aginsky, & William J. Flynn at the 73rd Annual Meeting of the American Society of Questioned Document Examiners, Toronto, Canada 2015.

- *The Forensic Examination of Genuine, Disguised, and Simulated Signatures – with an introduction to the Neuroscience and Kinematics of Handwriting* (2 days)
  o 2-day workshop conducted at the II Brazilian Symposium on Forensic Science, Brazilia, Brazil 2015.

- *The Examination of Skillfully Simulated Signatures*
  o Presented at the 67th Annual Meeting of the American Academy of Forensic Sciences, Orlando, FL 2015.
  o Presented at Canada Border Services Forensic Laboratory, Ottawa, Canada, 2015.

- *Skillful Freehand Signature Simulation* - co-presented with Lloyd Cunningham at the Joint Meeting of the American Society of Questioned Documents Examiners, Inc. & the Australasian Society of Forensic Document Examiners, Inc., Honolulu, HI 2014.

- *Skillfully Simulated Signatures* (1/2 day) – presented at the European Network of Forensic Handwriting Examiners (ENFHEX) meeting, Riga, Latvia, 2013.

- *Signature Examination of Healthy and Impaired Writers* (1 day) - co-presented with Prof. Michael Caligiuri, UCSD, at the American Academy of Forensic Sciences Annual Conference, Washington DC, 2013.

CURRICULUM VITAE – LINTON A. MOHAMMED

- *Neural Bases and Characteristics of Signature Formation in Writers with Dementia* (1/2 day)
  - Co-presented with Prof. Michael Caligiuri, UCSD, at the 70th Annual General Meeting of the American Society of Questioned Document Examiners, Charleston, SC 2012.

- *Signature Examination - Translating Basic Science into Practice* (1 day)
  - Co-presented with Prof. Michael Caligiuri, UCSD at the American Academy of Forensic Sciences Annual Conference, Seattle, WA 2010.

  - Co-presented with Prof. Michael Caligiuri, UCSD at the American Society of Questioned Document Examiners 68th Annual General Meeting, Victoria, BC, Canada, 2010.

- *Genuine, Disguised, and Forged Signatures (*1/2 day)
  - Presented at the 1st Eurasian Congress on Forensic Sciences, Istanbul, Turkey, 2008.

  - Presented at the Victoria Forensic Science Centre, Melbourne, Australia, 2008.

  - Presented at the European Network of Forensic Handwriting Experts (ENFHEX) Meeting, Krakow, Poland, 2009.

Papers

1. Do, D., & Mohammed, L. (2019). *An Evaluation of the Efficacy of an Electrostatic Detection Device as a Screening Tool for Latent Prints*. Presented at the 1st Joint Meeting of the European Network of Forensic Handwriting Experts (ENFHEX) and the European Fingerprint Working Group (EFP-WG), Porto Portugal; the 77th Annual General Meeting of the American Society of Questioned Document Examiners, Cary, NC, and the California State Division of the International Association for Identification Meeting, Burlingame, CA.

2. Caligiuri, M., Ommen, D., Fuglsby, C., Saunders, C., Mohammed, L., Morris, J., Bird, C. (2019). *The Kinematic Modeling of FDE Writership Opinion*. Presented at the 1st Joint Meeting of the European Network of Forensic Handwriting Experts (ENFHEX) and the European Fingerprint Working Group (EFP-WG), Porto Portugal; and the 77th Annual General Meeting of the American Society of Questioned Document Examiners, Cary, NC.

3. Ommen, D., Fuglsby, C., Saunders, C., Caliguiri, M., Mohammed, L., Buscaglia, J. (2019). *Pairwise Comparison Scores for Handwritten Questioned Documents*. Presented at the American Academy of Forensic Sciences 71st Annual Scientific Meeting. Baltimore, MD.

CURRICULUM VITAE – LINTON A. MOHAMMED

4. Fuglsby C, Mohammed L, Saunders C, Ommen D, Buscaglia J, Caligiuri M. (2018). *FDE Conclusion Scales Parts 1 & 2: Reverend Bayes or Professor Kirk?* Presented at the 76th Annual Conference of the American Society of Questioned Document Examiners, Park City, UT.

5. Ommen, D., Fuglsby, C., Saunders, C., Caligiuri, M., Mohammed, L., Buscaglia, J. (2018). *Pairwise Scores for Designing Handwritten Document Comparisons*. Poster presented at Forensics @NIST, Gaithersburg, MD.

6. McClary, C., Mohammed, L., Caligiuri, M. (2018). *An Analysis of Forensic Document Examiner (FDE) Aptitude in Determining Velocity Rates of Strokes*. Presented at the American Academy of Forensic Sciences Conference, Seattle, WA.

7. Fuglsby, C., Mohammed, L., Buscaglia, J., Saunders, C. (2018). *Sufficiency and Complexity Factors in Handwriting Examination*. Presented at the Impression, Pattern, & Trace Evidence Symposium, Washington, DC.

8. Caliguiri, M., Mohammed, L. (2018). *Error Rates in Handwriting Examination*. Presented at the CSAFE Error Rates Symposium, Arlington, VA.

9. Caligiuri, M., Mohammed, L., Lanners, B. & Hunter G. (2017). *Kinematic Validation of FDE Determinations About Authorship in Handwriting Examination.* Presented at the 75th Annual Conference of the American Society of Questioned Document Examiners, San Diego, CA.

10. Mohammed, L. (2017). *The Kinematics of Signatures and Handwriting*. Presented at the 2nd Saudi International Conference on Forensic Medicine and Sciences, Riyadh, Kingdom of Saudi Arabia.

11. Domitrovich, S. Judge, Seaman Kelly, J., Mohammed, L. (2017). *A Review of the Almeciga V. Center for Investigative Reporting, Inc. Decision: Analysis and Counter-Analysis*. Presented at the American Academy of Forensic Science Conference, New Orleans, LA.

12. Mohammed, L. (2016). *Document Examination – not just handwriting*. Presented to the Young Forensic Scientists Forum, American Academy of Forensic Science Conference, Las Vegas, NV.

13. Mohammed, L. (2014). *Kinematic approach to signature analysis*. Presented at the 3rd. International Workshop on Automated Forensic Handwriting Analysis, Honolulu, HI.

14. Mohammed, L. (2013). *Handwriting stroke kinematics*. Presented at the Measurement Science and Standards in Forensic Handwriting Analysis conference, NIST, Gaithersburg, MD.

CURRICULUM VITAE – LINTON A. MOHAMMED

15. Mohammed, L., Found, B., Caligiuri, M., Rogers, D. (2012). *Dynamics of stroke direction in genuine and forged signatures.* Presented at the American Academy of Forensic Sciences Conference, Atlanta, GA.

16. Mohammed, L., Found, B., Caligiuri, M., Rogers, D. (2009). *Pen pressure as a discriminating feature between genuine and forged signatures* – Presented at the International Graphonomics Society Conference, Dijon, France.

17. Mohammed, L., Found, B., Caligiuri, M, Rogers, D. (2009). *Can dynamic features be used to discriminate between genuine, auto-Simulated, and simulated signatures?* - Presented at the 61st Annual Conference of the American Academy of Forensic Sciences, Denver, CO.

18. Mohammed, L. (2008). *Judicial challenges to expert witness testimony in the USA: The Daubert Trilogy* -Presented at the 1st. Eurasian Congress on Forensic Sciences, Istanbul, Turkey.

19. Mohammed, L., Found, B., Rogers, D. (2008). *Genuine and disguised signatures – An empirical approach* - Presented at the 60th Annual Conference of the American Academy of Forensic Sciences, Washington, DC.

20. Mohammed, L., Williams, D. (2006). *Preparing demonstrative charts with the use of Adobe Photomerge®* - Poster presentation, American Academy of Forensic Sciences, Seattle, WA.

21. Mohammed, L. (2005). *The Edge of Light™ Scanner* - Presented at the American Academy of Forensic Sciences Conference, New Orleans, LA.

22. Mohammed, L. (2003). *Daubert and documents* – Presented at the California Association of Criminalists Fall Conference, San Diego, CA.

23. Mohammed, L. (2003). *A standardized training program for Forensic Document Examiners – A proposal*- Presented at the 61st Annual Conference of the American Society of Questioned Document Examiners, Baltimore, MD.

24. Mohammed, L. (2001). *Demonstrative evidence and multi-media technology* - Presented at the 59th Annual Conference of the American Society of Questioned Document Examiners, Des Moines, IA.

25. Mohammed, L., Buglio, J., Shafer, A. (2000). *The influence of paper on the performance of the VSC-2000 spectrometer* - Presented at the 58th Annual Conference of the American Society of Questioned Document Examiners, Ottawa, Ontario, Canada.

26. Mohammed, L., Buglio, J. (2000). *The Association of Forensic Document Examiners* - Prepared for the 58th Annual Conference of the American Society of Questioned Document Examiners, Ottawa, Ontario, Canada.

CURRICULUM VITAE – LINTON A. MOHAMMED

27. Mohammed, L. (1992). *Cocaine and handwriting* - presented at the 50th Annual Conference of the American Society of Questioned Document Examiners, Milwaukee, WI.

28. Mohammed, L. (1991). *Signature disguise in Trinidad and Tobago* - presented at the 49th Annual Conference of the American Society of Questioned Document Examiners, Orlando, FL.

PROFESSIONAL AFFILIATIONS

- American Society of Questioned Document Examiners
  - President, 2010 – 2012
  - Vice-President, 2008 – 2010
  - Treasurer, 2006 – 2008
  - Director, 2004 – 2006;
  - Annual Conference Program Chair, 2006 & 2017
  - Chair, Evaluation and Examination Committee, 2002 – 2006
  - Annual Conference Site Chair, 2002

- American Academy of Forensic Sciences
  - Fellow – Questioned Documents Section
  - Chair – Questioned Documents Section, 2016 – 2018
  - Chair – Inter-Disciplinary Symposium 2018
  - Co-Chair – Inter-Disciplinary Symposium 2017
  - Secretary – Questioned Documents Section, 2014 – 2016

- Canadian Society of Forensic Science

- Chartered Society of Forensic Sciences

PROFESSIONAL ACTIVITIES

- Member – Academy Standards Board, 2017 –

- Member – Expert Working Group on Human Factors in Handwriting Examination, National Institute of Standards and Technology, 2015 – 2017.

- Member – Physics/Pattern Scientific Area Committee within the National Institute of Standards and Technology Organization of Scientific Area Committees (NIST/OSAC), 2014 –2016.

- Participant in the General Forensics Technology Working Group, National Institute of Justice, 2011

- Participant in Scientific Working Group on Documents (SWGDOC), 2009 – present

- Grant reviewer for the National Institute of Justice and affiliated agencies, 2009 – present

CURRICULUM VITAE – LINTON A. MOHAMMED

- Editor - Journal of the American Society of Questioned Document Examiners

- Editorial Review Board Member:
  - Journal of Forensic Sciences
  - Forensic Science and Technology (China)

- Guest reviewer:
  - Forensic Science International
  - Science & Justice
  - Australian Journal of Forensic Science
  - Egyptian Journal of Forensic Sciences
  - Arab Journal of Forensic Sciences & Forensic Medicine
  - IEEE Transactions on Cybernetics

CONTINUING EDUCATION

- American Society of Questioned Document Examiners, Park City, UT 2018
  - Write-On 3.0 Workshop
  - The Greatest Forger to Ever Get Caught

- American Society of Questioned Document Examiners, San Diego, CA 2017
  - Forensic Science Research: Your Mission to Propose, Innovate, and Collaborate
  - Preparing a Digital Signature File for Forensic Analysis
  - Chinese Handwriting and Signatures Workshop: Hanzi Through the Eyes of the Forensic Document Examiner
  - Write or Wrong? Bias, Decision-Making, and the Use of Contextual Information in Forensic Document Examination

- American Society of Questioned Document Examiners, Pensacola, FL 2016
  - Measuring Frequency Occurrence in Handwriting and Hand Printing Characteristics
  - Sequence of Entries Determination – New Approach to Additional Print

- American Society of Questioned Document Examiners, Toronto, Canada 2016
  - Principles of Forensic Examination of Arabic Signatures

- American Society of Questioned Document Examiners, Honolulu, HI 2014
  - Adobe - Digital Media & Evidence

- American Academy of Forensic Sciences, Seattle, WA 2014
  - Science, Law, and the Inferential Process: The Epistemology of Scientific Conclusions

- National Institute of Standards and Technology (NIST), Gaithersburg, MD 2013.
  - Measurement Science and Standards in Forensic Handwriting Analysis

- American Academy of Forensic Sciences, Atlanta, GA, 2012
  - Paper Fundamentals for Forensic Document Examiners
  - Digital Photography for Forensic Document Examiners

CURRICULUM VITAE – LINTON A. MOHAMMED

- American Society of Questioned Document Examiners, Philadelphia, PA, 2011
  - Printing Process Identification for Forensic Document Examiners
  - Using Adobe Photoshop in a QD Workflow

- American Society of Questioned Document Examiners, Victoria, BC, Canada, 2010
  - Electronic Recording and Analysis of Handwritten Signatures & Writing

- Cedar Crest College, Allentown, PA, 2010
  - Multivariate Analysis for Forensic Scientists: Statistical Pattern Recognition for Physical Evidence Analysis and Chemometrics

- American Academy of Forensic Sciences, Denver, CO, 2009
  - Estimation of Uncertainty – Is Anyone Certain What This Means?
  - Security Documents before and After the Crime: REAL ID, Physical and Electronic Security Features, Developments in Commercial Printing Technology, and an Introduction to Counterfeit Link Analysis

- American Academy of Forensic Sciences, Washington DC, 2008
  - The Applications of Color Analysis and Light Theory in the Forensic Examination of Documents Workshop

- American Society of Questioned Document Examiners, Portland, OR 2006
  - Fine and Subtle Features of Handwriting Workshop
  - Signature Workshop

- Southeastern Association of Forensic Document Examiners, Atlanta, GA, 2006
  - Disguised and Forged Signatures Workshop

- American Academy of Forensic Sciences, New Orleans, LA, 2005
  - State of the Art Infrared and Ultraviolet Examinations of Documents by the Video Spectral Comparator

- California Criminalistics Institute, Sacramento, CA, 2005
  - Technical Writing for Criminalists

- American Board of Forensic Document Examiners, Las Vegas, NV, 2004
  - Daubert Seminar

- American Academy of Forensic Sciences, Chicago, IL, 2002
  - Note Taking for Forensic Document Examiners Workshop

- Rochester Institute of Technology, Rochester, NY, 2002:
  - Printing Process Identification and Image Analysis for Forensic Document Examiners

- Limbic Systems, Inc., Bellingham, WA, 2001:
  - Measurement of Internal Consistencies Software (MICS)

CURRICULUM VITAE – LINTON A. MOHAMMED

- American Board of Forensic Document Examiners, Norcross, GA, 2000:
    o Canon Photocopier and Facsimile Training Workshop

- California Criminalistics Institute, Sacramento, CA, 2000:
    o Special Topics in Questioned Documents

- Southwestern Association of Forensic Document Examiners, Las Vegas, NV, 1999:
    o Typewriter Examination & Classification Workshop

- American Board of Forensic Document Examiners, Las Vegas, NV, 1998:
    o Examination Techniques in Handwriting & Rubber Stamp Cases Seminar

- Canadian Society of Forensic Science 44th Annual Conference, Regina, Saskatchewan, Canada, 1997:
    o Digital Image Processing Workshop

- California Criminalistics Institute, Sacramento, CA, 1997:
    o Courtroom Presentation of Evidence

- American Society of Questioned Document Examiners 55th Annual Conference, Scottsdale, AZ, 1997:
    o Handwriting Workshop

- American Society of Questioned Document Examiners 51st Annual Conference, Ottawa, Canada, 1993:
    o Laser Printer Workshop
    o Miscellaneous Document Examination Workshop

- American Society of Questioned Document Examiners 50th Annual Conference, Milwaukee, WI, 1992:
    o Signature Workshop

- American Society of Questioned Document Examiners 49th Annual Conference, Orlando, FL, 1991:
    o Canon Fax Workshop
    o Deposition Testimony Workshop
    o Expert Witness Workshop
    o Signature Comparison Workshop

October 1, 2019

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
SAN ANTONIO DIVISION**

DR. GEORGE RICHARDSON, ROSALIE WEISFELD, AUSTIN JUSTICE COALITION, COALITION OF TEXANS WITH DISABILITIES, MOVE TEXAS CIVIC FUND, LEAGUE OF WOMEN VOTERS OF TEXAS, and AMERICAN GI FORUM OF TEXAS, INC., Plaintiffs, v. TEXAS SECRETARY OF STATE, TRUDY HANCOCK, in her official capacity as BRAZOS COUNTY ELECTIONS ADMINISTRATOR, and PERLA LARA in her official capacity as CITY OF MCALLEN, TEXAS SECRETARY, Defendants.	Civil Case No. 5:19-cv-00963

DECLARATION OF DR. LINTON A. MOHAMMED

EXHIBIT B

Forensic Science Consultants, Inc.

433 Airport Boulevard, Suite 406
Burlingame, CA 94010-2017

Linton A. Mohammed, Ph.D.
Forensic Document Examiner

Tel: 650-548-1652
lamqde@gmail.com
www.qdexams.com

Diplomate: American Board of Forensic Document Examiners
Diploma in Document Examination - Forensic Science Society (England)
American Society of Questioned Document Examiners (Member & Past-President)
American Academy of Forensic Sciences (Fellow)

Linton A. Mohammed
Forensic Document Examiner

TRIAL AND DEPOSITION RECORD (from 2013 to present)

Date	Court [1]	Case	Attorney	P/D[2]
05/14/13	Deposition (LA)	Isakulyan v. Union Bank	Schufreider	D
05/24/13	Arbitration (LA)	Isakulyan v. Union Bank	Schufreider	D
07/16/13	Trial (LA)	Giedd v. Cornell	Roberson	D
08/26/13	Deposition (SF)	Tan v. Tran et al.	Kunnes; Jones	D
08/28/13	Deposition (LA)	SA Challenger v. Kamen et al	Coyner	D
09/26/13	Arbitration (LA)	SA Challenger v. Kamen et al	Coyner	D
12/02/13	Trial (SJ)	Cain Family Trust	Clayton	P
01/15/14	Hearing (Sonoma County)	Larch v. Cream	Kim	D
03/24/14	Trial (SJ)	Torres v. Torres	Acosta	P
04/02/14	Deposition (SF)	Cybersearch v. Sherwood	Gantz	P
05/15/14	Trial (SM)	Tan et al. v. Tran et al.	Veiluva; Jones	D
07/08/14	Grand Jury (SF)	People v. Bell et al.	Garcia	P
07/09/14	Trial (SJ)	Rodriguez v. Sanchez	Low	P
08/05/14	Trial (LA)	Stevens v. Stevens	Grot; LaMolinara	P
09/08/14	Deposition (SF)	Hill et al. v. Wilke Fleury et al.	Evans	D

[1] SD – San Diego; LA – Los Angeles; LV – Las Vegas; SF – San Francisco; SJ – San Jose
[2] P – Plaintiff/Prosecution; D – Defense

TRIAL AND DEPOSITION RECORD (from 2011 to present):
Linton A. Mohammed, Forensic Document Examiner

Date	Court [3]	Case	Attorney	P/D[4]
09/23/14	Trial (SJ)	People v. Wantland	Kirchick	D
01/08-09/15	Hearing	BART		P
02/09/15	Deposition	Yaqub v. Citimortgage	Paganelli	D
11/05/15	Deposition San Mateo, CA	Geiger v. Farmers Ins. et al	Halvorson	D
12/11/15	Trial Dept. 67, Los Angeles, CA	Estate of S. Sengupta	Mansell	D
05/10/16	Deposition (SF)	Duong v. ITT et al.	Schwin	P
05/13/16	Trial Yuba City, CA	Zenda v. Shoker	Guth	D
07/12/16	Deposition Utah (Telephonic)	Matter of Dante Ketchens	Noel	P
08/04/16	Deposition (CA)	Spight v. Gray	Norris	P
08/30/16	Deposition (CA)	Estate of Mary Ellen Cunha San Rafael, CA	Kelley	D
08/31/16	Deposition (CA)	Matter of Lili Tu	Riley	D
09/20-21/16	Trial San Mateo, CA	Spight v. Gray	Norris	P
01/20/17	Trial Dept. 37, Santa Clara, CA Judge Andrea Flint	People v. Melendez	McComas	D
02/22/17	Trial Dept. 4, Santa Cruz, CA Judge John Gallagher	Estate of Daren Drakes	Nelson	P

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[3] SD – San Diego; LA – Los Angeles; LV – Las Vegas; SF – San Francisco; SJ – San Jose; SM – San Mateo
[4] P – Plaintiff/Petitioner/Prosecution; D – Defense

Page **2** of **7**

TRIAL AND DEPOSITION RECORD (from 2011 to present):
Linton A. Mohammed, Forensic Document Examiner

Date		Court [5]	CaseAttorney	P/D[6]
03/13/17	Deposition Redwood City, CA	Goldstein v. Macalik	Kallis	D
04/03/17	Deposition Los Angeles, CA	Galstian et. al v. Minassian et. al	Swift	P
04/04/17	FINRA Arbitration San Diego, CA	Peters v. RBC Wealth Management et. al.	Caietti	P
06/29/17	Trial Dept. 23, San Mateo, CA Judge W. Raymond Swope	Goldstein v. Macalik	Kallis	D
07/13/17	Deposition San Jose, CA	Nguyen v. Diep	Goldstein	D
07/26/17	Deposition Burlingame, CA	New v. Langit	Rodriguez	P
07/27/17	Deposition San Mateo, CA	Estate of Beverly Foster	Baer	P
08/24/17	Deposition Los Angeles, CA	Shahryar v. Kamrany	Lichter/ Salissian	P
09/07/17	Arbitration Los Angeles, CA	Schwartz v. Piccone	Russell	P
09/26/17	Trial Dept. 5, Santa Barbara, CA Judge Colleen Sterne	Estate of John Smith Clark	Hellman	P
10/31/17	Trial Dept. 22 Santa Clara, CA Judge Aaron Persky	Estate of William W. Parker	Dames	P

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[5] SD – San Diego; LA – Los Angeles; LV – Las Vegas; SF – San Francisco; SJ – San Jose; SM – San Mateo
[6] P – Plaintiff/Petitioner/Prosecution; D – Defense

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TRIAL AND DEPOSITION RECORD (from 2011 to present):
Linton A. Mohammed, Forensic Document Examiner

Date	Court [7]	Case	Attorney	P/D[8]
01/04/18	Deposition San Mateo, CA	Doe v. County of San Mateo	Levy	D
02/23/18	Hearing Probate Hearings Division U.S. Dept. of the Interior Albuquerque, NM Judge Earl J. Waits	Estate of Earl A. Williams	Artus	P
02/26/18	Deposition Fairfield, CA	Goss v. Folan	Seto/Burnside	D
02/28/18	Deposition Burlingame, CA (via video)	Saucedo v. State of New Hampshire	ACLU	P
03/01/18	Deposition San Jose, CA	Katz et al. v. Kwan et al.	Hsueh	D
03/14/18	Trial Department K Los Angeles Superior Court Pasadena, CA Judge Theresa Traber	Marriage of Hidalgo	Mendell	R
04/20/18	Deposition Danville, CA	Marta v. Applebees	May	P
04/23/18	Trial Department 16 San Mateo Superior Court San Mateo, CA Judge Richard H. Dubois	Matter of The Beverly Foster Trust	Baer	P
05/10/18	Deposition San Francisco, CA	Mahan et al. v. Chan et al.	Zeff	D
06/15/18	Trial Department 504 Probate San Diego Superior Court San Diego, CA Judge Jeffrey S. Bostwick	Estate of George R. Walls, Jr.	McDonald	P

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[8] P – Plaintiff/Petitioner/Prosecution; D – Defense

TRIAL AND DEPOSITION RECORD (from 2011 to present):
Linton A. Mohammed, Forensic Document Examiner

Date	Court [9]	Case	Attorney	P/D[10]
08/06/18	Trial Dept. 5A U.S. District Court Los Angeles, CA Judge Michael W. Fitzgerald	Lincoln Benefit Life Company v. Dallal	Cowan/ Kojima	P
08/29/18	Deposition Alameda, CA	Neth v. Byrne	Perruzzi	D
09/18/18	Deposition St. Louis, MO	Priorities USA et al v. State of Missouri et al.	Geise	P
09/24/18	Trial Room 203 Cole County District Court Jefferson City, MO Hon. Richard Callahan	Priorities USA et al v. State of Missouri et al.	Geise	P
10/04/18	Deposition Los Angeles, CA	Baral v. Schnitt	Kushner	D
10/12/18	Deposition Sunnyvale, CA	Chen v. Murad	Garsson	D
10/16/18	Deposition Los Angeles, CA	Rostack v. Sabella	Chang	P
11/01/18	Deposition Santa Rosa, CA	Ramos, Creedon v. Wallahan	Terreri	P
11/05/18	Trial Dept. 57 Los Angeles Superior Court Los Angeles, CA Judge Randolph M. Hammock	Baral v. Schnitt	Kushner	D
11/20/18	Deposition Austin, TX	Galvan, et al v. Pablos, et al	Najvar	P
12/03/18	Hearing Sacramento, CA	CDCR v Pratt	Tanner	P

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[9] SD – San Diego; LA – Los Angeles; LV – Las Vegas; SF – San Francisco; SJ – San Jose; SM – San Mateo
[10] P – Plaintiff/Petitioner/Prosecution; D – Defense

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TRIAL AND DEPOSITION RECORD (from 2011 to present):
Linton A. Mohammed, Forensic Document Examiner

Date	Court [11]	Case	Attorney	P/D[12]
12/04/18	Trial Dept. 18 Sonoma County Superior Court Judge Rene Auguste Chouteau	Ramos, Creedon v. Wallahan	Terreri	P
03/05/19	Trial Probate Court Anchorage, AK (By telephone)	Estate of Earl A. Williams	Artus	P
04/02/19	Trial U.S. District Court Los Angeles, CA Dept. 10C Judge Christina A. Snyder	United States v. L. Vega	Windsor	D
04/04/19	Trial Alameda County Superior Court Hayward, CA Dept. 514 Judge Patrick McKinney	Eden Housing Management, Inc. v. H. Gamer	Galvin	P
06/26/19	Trial Polk County District Court Des Moines, IA Dept. 208 Judge Joseph Seidlin	League of United Latin American Citizens of Iowa, et al v. Iowa Secretary of State Paul Pate, in his official capacity		P
07/17/19	Trial Santa Clara Superior Court San Jose, CA Dept. 12 Judge Cynthia C. Lie	Jacobs v. Ramachandran	Marks	P
10/24/19	Trial Santa Clara Superior Court San Jose, CA Dept. 3 Judge Patricia Lucas	Pesic v. Zouves	Goodman	D

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[11] SD – San Diego; LA – Los Angeles; LV – Las Vegas; SF – San Francisco; SJ – San Jose; SM – San Mateo
[12] P – Plaintiff/Petitioner/Prosecution; D – Defense

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TRIAL AND DEPOSITION RECORD (from 2011 to present):
Linton A. Mohammed, Forensic Document Examiner

Date	Court [13]	Case	Attorney	P/D[14]
12/19/19	Deposition Los Angeles, CA	Shenon v. New York Life	Shea	D
12/19/19	Hearing (by telephone) Judge Garcia JAMS San Francisco, CA	Eden Housing Management v. Richardson	Gavin	P

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[14] P – Plaintiff/Petitioner/Prosecution; D – Defense

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UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
SAN ANTONIO DIVISION

DR. GEORGE RICHARDSON, ROSALIE WEISFELD, AUSTIN JUSTICE COALITION, COALITION OF TEXANS WITH DISABILITIES, MOVE TEXAS CIVIC FUND, LEAGUE OF WOMEN VOTERS OF TEXAS, and AMERICAN GI FORUM OF TEXAS, INC.,
 	
    Plaintiffs,
 	
      v.
 	
TEXAS SECRETARY OF STATE, TRUDY HANCOCK, in her official capacity as BRAZOS COUNTY ELECTIONS ADMINISTRATOR, and PERLA LARA in her official capacity as CITY OF MCALLEN, TEXAS SECRETARY, Defendants.
	Civil Case No. 5:19-cv-00963

DECLARATION OF DR. LINTON A. MOHAMMED

EXHIBIT C

AW5-42
Prescribed by Secretary of State
Sec. 87.0431, Texas Election Code
3/07

NOTICE OF REJECTED BALLOT

This is to serve as notice that your ballot for the _Elemeral 2018_ Election was rejected
by the early voting ballot board and was not counted.

Name of Voter _Donna Adams Richardson_
VUID Number _104 08825 456_

Reason for Rejection: (Check As Appropriate)

_____   1)   Certificate on carrier envelope was not properly executed.
_____   You failed to sign your signature or make your mark.
_____   The witness failed to indicate on the envelope that you could not
                make a mark.
_____   The assistant or witness failed to print their name.
_____   The assistant or witness failed to sign their name.
                The residence address of the assistant or witness was not given.

___✓___   2)   It was determined that the signature on the application for ballot by mail and
               carrier envelope was not signed by the same person.

_____   3)   Application for ballot by mail did not state a legal ground for voting by mail.

_____   4)   Voter registration records indicated you did not have an effective registration
               for this election.

_____   5)   Address to which ballot was mailed was not outside the county. Voting
               early by mail due to expected absence from the county requires balloting
               materials be mailed to an address outside the county.

_____   6)   The residence address on the statement of residence is not located in the
               political subdivision conducting the election.

_____   7)   The mailing address on the application for ballot by mail did not match your
               voter registration address nor did the mailing address match any addresses
               provided on your statement of residence. Since you did not indicate on your
               application for a ballot by mail that you were having your ballot mailed to a
               hospital, retirement center, long term care facility, nursing home, jail, or a
               relative, your ballot was rejected.

_____   8)   The statement of residence was not included in the carrier envelope.

_____   9)   No identification was included with your mail ballot.

_____   10) Other:

_____

Rw Davis
Signature of Early Voting Ballot Board Judge

_11/3/2018_
Date

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